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## RESEARCH ARTICLE

# Preliminary psychometric evidence of the Greek adaptation to the EC-CC HOME scale for use in institutional environments

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**Abstract:** Although lacking in official figures, latest reports from NGOs highlight that Greece has over 85 institutional settings that house more than 2,500 children, excluding unaccompanied minors entering the system continuously for the past few years. Given the impact that institutional care has been found to have on psychological and cognitive outcomes, the authors make the case for the adaptation of Early Childhood Child Care HOME (EC-CC-HOME) a world-renowned instrument that assesses children's child-care environment. In this instance, we have adapted the child-care version of HOME to assess the physical and organisations aspects of the residential environment, following the permission and through collaboration with the developer. This brief report presents some of the preliminary evidence of the first step undertaken towards the full adaptation of EC-CC-HOME in Greek and for use in institutional environments; participants were 29 children residing in such environments. Preliminary results on the psychometric characteristics of the measure, especially in relation to the learning aspect of the environment presented here, hold promise. This is an especially important first indication of how the measure works in view of the imminent adaptation of the scale to be used with institutional environments where children can benefit greatly from such a measure. Issues in relation to good practices in providing evidence for the psychometric characteristics of measures are briefly discussed as part of this investigation.

**Keywords:** Early Childhood Child Care HOME, HLE, institutional care, reliability, convergent validity

## 1 Introduction

Europe, on the whole, still relies on residential health or social care settings for children whose parents are unable to care for them. This is despite research advising against long-term residence in institutional care<sup>[1]</sup>. Focusing on the case of Greece, there is a dearth of data in order to provide comparative measures to track numbers of children in care across time. However, a report from the Roots Research Foundation<sup>[2]</sup> notes that in 2014, about 2,825 children lived in 76 different institutional settings.

These numbers should be placed in perspective by exploring the relationship between environment in residen-

tial care and development. Developmental delays, are indeed reported among children residing and growing up in institutional care, when compared to those in family settings<sup>[3-8]</sup>. Despite the years of research and methodological advances this view remains consistent: the living environments of institutional care fall short of typical family environments with regards to children's cognitive, social and emotional development<sup>[6]</sup>. Such results are closely linked to time spent within such settings. In particular, there is a negative linear correlation between time in institutional care and development up to 12 months of age<sup>[9]</sup>, while long term stay in institutions is associated with lower cognitive abilities, inability to form healthy attachment, indiscriminate friendliness and stereotypes<sup>[10]</sup>.

Institutional settings on the whole do not provide the stimulation and experiences needed for optimal brain development<sup>[11]</sup>. The quality of interactions between child and carer are of prime importance when considering this. Ratio of children to carers is often high, which in turn, translates to fewer meaningful interactions between carer and child.<sup>[5]</sup> This is perhaps associated with the reported lack of sensitivity in the interactions between them<sup>[13]</sup>, the lack of lasting and consistent relationships with carers, and, in the worst cases, institutional neglect<sup>[5]</sup>.

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In line with this evidence, creating the means to assess the quality of the physical, organizational, and interactional aspects of the residential environment within which children develop should be seen as important. In this case the assessment of the quality of the environment in institutional settings forms part of a bigger umbrella project, where we explore how children in institutional care differ in terms of cognitive and educational outcomes compared to typically developing matched controls in home settings, as well as the role of the environment in their attainment. Given this emphasis on the environment, an adaptation in Greek of the Early Childhood Child Care Home Observation of Measurement of the Environment<sup>[14]</sup> took place. This brief research report uses preliminary data to discuss some evidence on the psychometric characteristics of the measure with the intention to move further with the development of an adapted version of EC-CC-HOME specifically for institutional care, under the guidance of the developers.

The Child Care HOME Inventory (CC-HOME), was designed for use in “non-parental child care arrangements”<sup>[14]</sup>. It comprises the infant-toddler version and the Early Childhood (EC) version. The full EC CC-HOME scale has 8 dimensions, including caregiver responsiveness, acceptance, the physical environment, and the resources, the language and academic stimulation, and variety. Given the emphasis on the environment and educational outcomes of this study, this report presents preliminary evidence on the psychometric characteristics of part of the EC-CC-HOME, focusing on one of its dimensions, namely Academic Stimulation (AS). This is undertaken in relation to the Home Learning Environment (HLE) Index<sup>[15]</sup> employed widely in the literature on environment and child development/educational outcomes. The aim of the study is to establish whether HOME provides evidence regarding the quality of the environment in supporting learning through the dimension of AS, and in doing so how it compares with the commonly used HLE index. Therefore, the following research question is explored: To what degree does the dimension of AS, as measured in EC-CC-HOME present convergent validity with the HLE Index?

In order to address this above research question, another research question was formulated: To what degree did the AS dimension of EC CC HOME and HLE present sufficient evidence for reliability (internal consistency)?

## 2 Method

### 2.1 Participants

The study focused on 29 children from preschool to 1st grade ( $M_{ageinmonths} = 73.63$ ,  $SD = 10.98$ ), 53.6% fe-

males, residing in institutional settings in three urban centres in Greece. Inclusion criteria were that the children’s primary language was Greek, that they were typically developing and that they were enrolled in school.

### 2.2 Material and Procedures

CC-HOME was employed in this study comprising 58 questions organised in 8 dimensions outlined above. The international guidelines on adaptations of measures were followed (for example ITC, 2016; 2017), whereby translation from the PI of the project, expert feedback on the Greek translation from six academics, and a back translation from an independent bilingual expert were carried out. Professor Bradley provided feedback on the back translation, which was incorporated into the final version. The instruments required visits and direct observation of interactions of the environment and interactions between children and caregivers; a little over 50% of items comprising the tool were assessed via observations whereas the rest with interviews. Visits, including interviewing of carers, lasted in all cases between 75 and 120 minutes.

The HLE Index<sup>[15]</sup> is comprised of seven items on 7-point Likert scale, which focus on learning related activities including teaching and playing with letters and numbers, reading and painting and visits to the library. HLE Index was translated and back translated (as the items were straightforward) by two different experts and data were collected through a questionnaire administered to the guardians of the participants.

### 2.3 Ethical consideration

For this study that needed access to both children in schools and in institutions, we sought, and obtained, ethical approval from the University of Athens Ethics Committee (Com.2019/02) and through the Directorate of Child and Family Protection (Ministry of Labour, Social Security and Social Solidarity, Registration Number: 26653/783). Following explanation of the project to participants, including issues on confidentiality and anonymity and the right of participants to withdraw at any point, formal and informed consents were obtained in all cases by the legal guardians; in the case of children in institutions included in this report guardianship lay with the institution.

### 2.4 Statistical Analysis

For the purposes of this study, a reliability analysis, prerequisite for the investigation of evidence of validity was carried out. In particular,  $KR20$  and  $\omega$ <sup>[16]</sup> coefficients were calculated for the Academic Stimulation di-

mension and *Cronbach*  $\alpha$  and  $\omega$  for the HLE Index. Convergent validity between Academic Stimulation (incorporating questions about child encouragement to learn numbers, and HLE Index (incorporating questions like visiting the library, playing and teaching numbers and letters, drawing, playing with poems and rhymes) was calculated via Product Moment Correlation Coefficient; the test was conducted at the  $\alpha=0.05$  level of significance.

### 3 Results

Before addressing the key research question of this mini investigation, namely “the extent to which academic stimulation, as measured in EC-CC-HOME presented convergent validity with the HLE Index” we first sought to investigate internal consistency in the measure of interest. In line with this evidence, reliabilities of Academic Stimulation and HLE are presented below (see Table 1)

**Table 1.** Reliabilities of AS and HLE and convergent validity between AS and HLE

	McDonald's $\omega$	KR-20/ Cronbach $\alpha$	r
Academic Stimulation	0.86	0.82	
HLE	0.74	0.69	
			0.51**

\*numbers would be .79 and .75 respectively by excluding the item on drawing

\*\* two asterisks indicate p value equal or less than .01

R, the statistic selected to report convergent validity between AS and HLE, suggests a moderate, positive linear and statistically significant correlation between AS and HLE Index. Accordingly analyses provide support to convergent validity between the two measures.

### 4 Discussion

“The Child Care HOME Inventory (CC-HOME) was designed to measure the quality and quantity of stimulation and support available to a child in non-parental child care arrangements taking place in home-like settings other than the child’s own home”<sup>[14]</sup>.

This paper, presenting preliminary findings with regards to adaptations of EC version made to the scale to be used in Greece and with populations in institutional care, by selecting the part of this multidimensional construct specifically assessing Academic Stimulation with the HLE Index -a quite straightforward index on the assessment of home learning environment. The selection

of the measures was made under the assumption of academic stimulation would be assessed similarly regardless of whether assessed in day care or in institutional care. The measures presented at least acceptable reliability coefficients. AS coefficients were reported as good (well above 0.8) whereas HLE coefficients presented evidence for reliabilities about or a little above the acceptable standard of 0.7. While the KR-20 a special case of Cronbach  $\alpha$  stresses homogeneity,  $\omega$  indicates the proportion of variance shared between variables explored and a common factor. In that instance,  $\omega$  is a more appropriate measure to determine whether items hold together in a way that sums can be calculated and used in a meaningful way. Given that in both instances  $\omega$  coefficients were well above 0.7, sums were calculated to explore the degree of convergent validity between the two measures.

Convergent validity, on the other hand, the question of interest in this short report, is a means to assess construct validity by the exploration of the strength of association between a scale (or subscale) of interest and a proxy (that is measures that look in to similar constructs). There has been a considerable debate though as to what constitutes evidence on convergent validity, what is the appropriate degree of association between the proxy and the measure of interest. Indeed, the analyses for convergent validity seek to provide evidence that the way a construct of interest is operationalized and measured is appropriate. But what does appropriate translate in terms of the magnitude of r between a measure and the proxy used for convergent validity purposes? Carlson and Herdman (2012)<sup>[17]</sup> provide a review of the substantial disagreement in terms of what constitutes evidence for convergent validity presenting studies that go as low as 0.28 and as high as 0.75. It seems therefore important to provide a rationale for accepting the result of r as evidence to convergent validity or not.

The measure of interest, in this particular report is the AS subscale of EC-CC-HOME and the proxy used was HLE Index<sup>[15]</sup>. The composite score has been found to be able to discriminate between families that provide rich or impoverished learning environments<sup>[18]</sup>, when we know that rich home learning environments are key to improving outcomes of children, especially the most disadvantaged and, thus, vulnerable<sup>[17]</sup>. The quality of HLE relates to both educational resources and parenting activities with children<sup>[19]</sup>. While HLE Index has been developed with the view to assess families in typical households, CC-HOME items were developed with the view to assess childcare environments, such as day care. As such we expected that the reliabilities of the HLE would not be excellent but we would like to see that they are acceptable and similarly we thought that a

moderate to high (between 0.5 and 0.7) convergent validity would offer adequate preliminary information about how this measure works under the circumstances; this is in line with international good practice.<sup>[17]</sup> A more detailed view is expected to yield further evidence of what might be some items that would be worth reviewing as part of the bigger project of the adaptation of the scale.

## 5 Author Contribution Statement

AT conceived and designed the study. AB was consulted at the initial stages and helped with the translation of the scale. KT designed the protocols. KT and AT collected the data. AT and AB did the drafting, and revising of the work and wrote the final manuscript, in consultation with KT. AT supervised the project from conception to submission.

## 6 Conflict of Interest Statement

The authors hereby state that there are no conflicts of interest in relation to this study.

## 7 Datasets are available on request

The raw data supporting the conclusions of this manuscript will be made available by the authors, without undue reservation, to any qualified researcher.

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